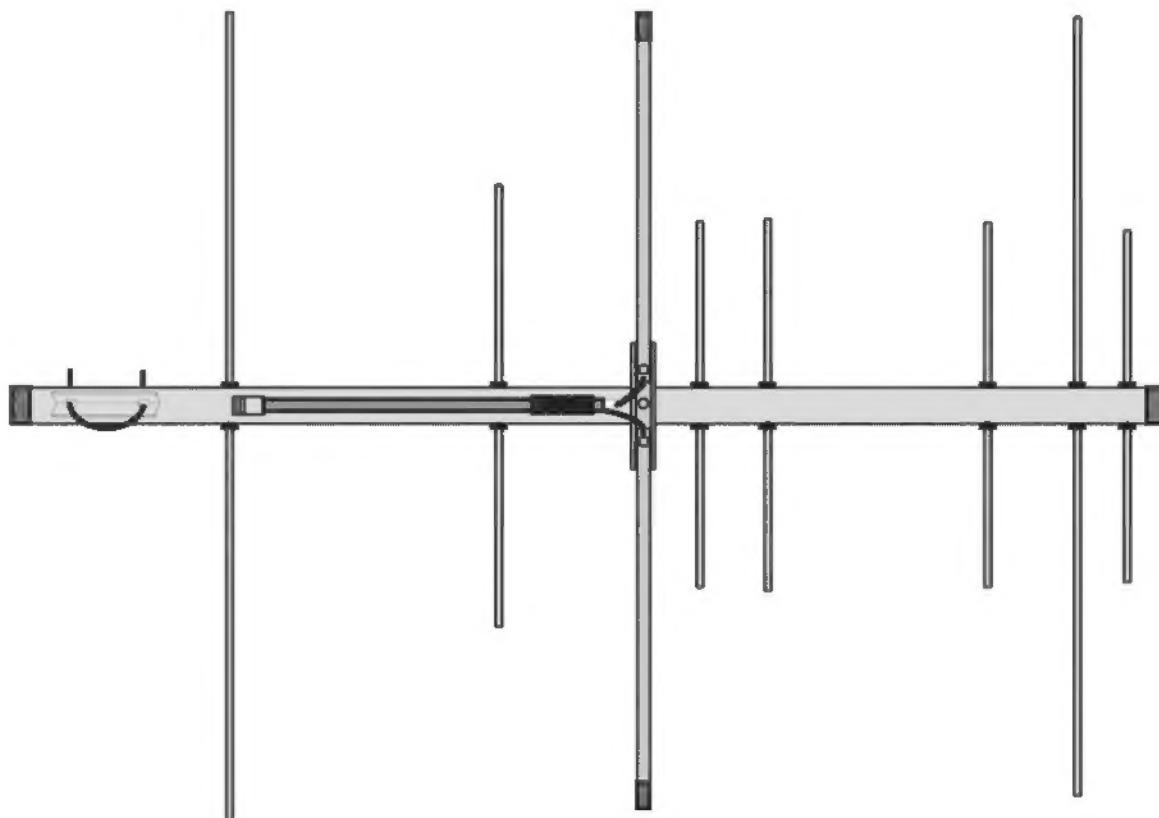


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**MFJ-1760**  
Dual-Band Beam

## INSTRUCTION MANUAL



Made in USA

## MFJ - 1760 Dual-Band Beam

### INTRODUCTION

The MFJ-1760 is a compact 144-148 MHz/420-450 MHz dual-band beam, consisting of interlaced 3-element 2-meter and 5-element 70 cm antennas. The 1760 is inconspicuous and low profile -- smaller than a TV antenna, and can easily be turned by a lightweight rotator such as the Hy-Gain AR-35.

The MFJ-1760 utilizes a single 50-ohm coax feed to cover both the 2-meter and 70 cm bands.

The MFJ-1760 is built-to-last -- using 6063 T-6 aircraft strength aluminum tubing. And it assembles in less than an hour.

***WARNING: Improper installation and assembly can be hazardous! Read these instructions thoroughly before attempting to assemble, install or operate this product! High power transmitting devices produce voltages that can cause severe burns or other injuries.***

### SPECIFICATIONS

#### Electrical Specifications

Frequency	Power (watts)		Elements	Gain	F/B (dB)
	CW	SSB			
144-148 MHz	500	500	3	8 dBi	17 dB
420-450 MHz	500	500	5	6 dBi	10 dB

#### Mechanical Specifications

Mast Size:	1- to 1-1/2" diameter
Overall Length:	47 inches
Turning Radius:	43 inches
Weight:	2 pounds
Wind Load:	Less than 1 square foot

### **CHOOSING A LOCATION FOR THE ANTENNA**

For best performance on receiving and transmitting, mount the antenna in a clear location above or away from buildings, towers, feedlines, utility wires, and other antennas. While your own ingenuity and particular circumstances will determine the final mounting method, we'll pass along a few ideas for both permanent installation and portable operation.

- **Never** mount this antenna in a location that will permit unsuspecting people to come in contact with the antenna elements.
- **Never** mount this antenna where a mechanical failure might allow the antenna to contact power lines or other utility wires.
- **Always** ground the feedline at the point where it enters a building to a good earth ground for lightning protection.

***WARNING: Always mount this antenna so that it is out of the reach of adults and children. The elements can cause injury and/or severe RF burns.***

### **Permanent Installation**

The ideal installation is a rigid pole or roof mount that puts the antenna completely in the clear. If the ideal installation is not possible, choose the best compromise. TV mast, heavy-duty rigid electrical conduit, and steel water pipes are suitable mast materials. This antenna will mount on masts between 1" and 1-1/2" OD. The use of soft or thin wall masts is not recommended.

### **Portable Operation**

The MFJ-1760 may be easily transported to temporary locations for portable, emergency, and contests.

Even for temporary or portable operation, do not be casual about selecting a suitable mast. If the antenna falls, it can be damaged and may cause serious injury. Whatever type of installation you choose, remember that the antenna should be installed where it cannot be contacted by people or animals or come in contact with power lines.

### **TOOLS AND TIME REQUIRED FOR ASSEMBLY**

The estimated assembly time is 30 minutes. Antenna assembly requires the following hand tools:

- 5/16" socket wrench
- 3/8" socket wrench.
- Safety glasses.

### **MFJ-1760 PARTS LIST**

As you unpack your antenna you should find the parts in the following list.

<u>Part Description</u>	<u>QTY</u>	<u>Part No.</u>
1/4"ID x 6" push-nut tool	1	808-1768-2
1-1/4" Plastic Cap	2	455630
SS Push nut	14	550081
Coax pigtail	1	620-3016
Tie-wraps	3	745-2158B
Insulator	1	465420
7/16" Plastic Cap	2	474639
10-24 x 2" screw	1	500157
1-1/4" x 47" Boom	1	170394
10-24 x 1" SS screw	2	504069
#10 SS lock washer	5	711-1037S
10-24 SS hex nut	5	554071
2-meter Reflector 3/16"x40-1/4"	1	160038
2-meter Director 3/16"x35"	1	160023
2-meter Driven Element 7/16"x17.5"	2	160123

70cm Reflector: 3/16"x13-3/8"	1	160122
70cm Director #1: 3/16"x12-3/16"	1	160121
70cm Director #2: 3/16"x12-5/16"	1	160120
70cm Director #3: 3/16"x11-13/16"	1	160087
70cm Director #4: 3/16"x11-9/16"	1	160083
U-bolt Set	1	758-9200

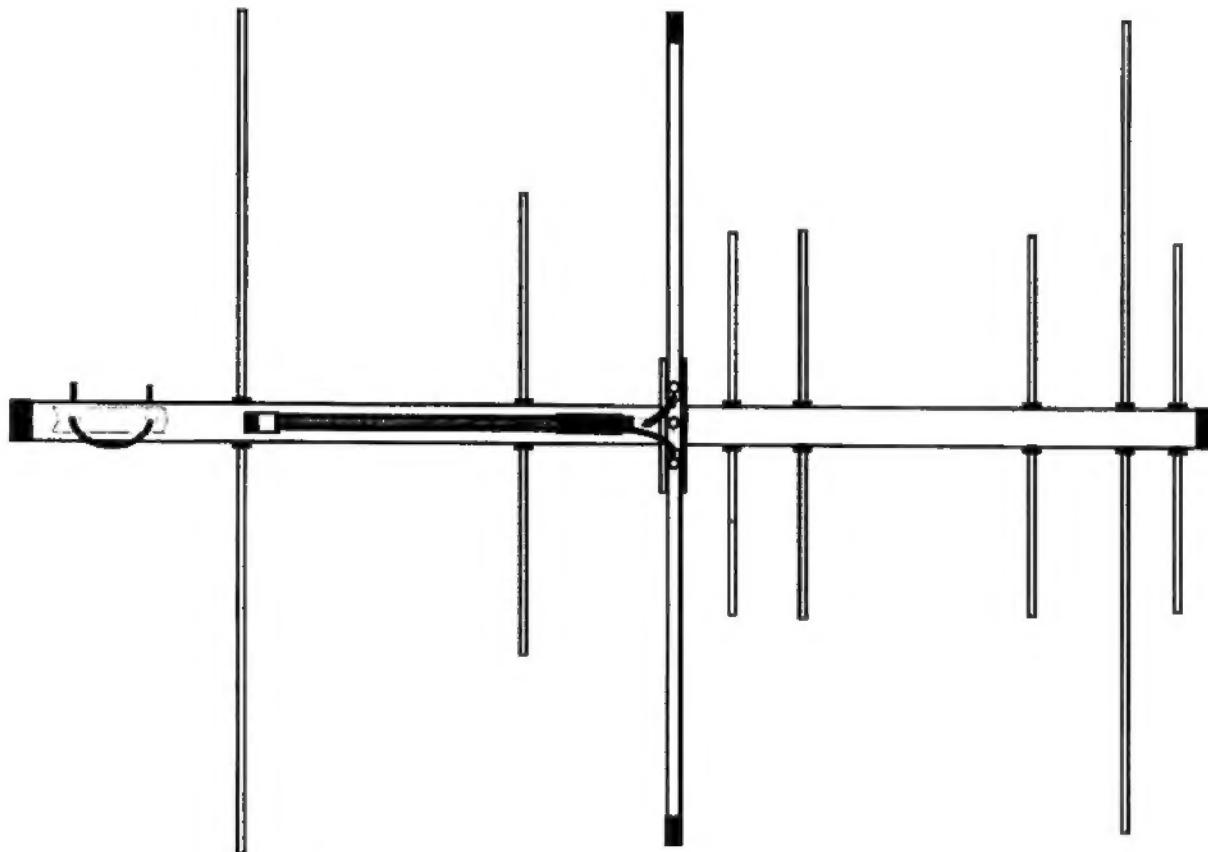
For installation, you will need some items not supplied with the antenna installation kit:

- A rigid mast or other mounting pipe between 1" and 1.5" outside diameter. (suitable materials include TV mast sections, galvanized iron pipe, or heavy duty rigid conduit.)
- Quality low-loss 50-Ohm coax with PL-259 connectors to connect the antenna to transmitter.
- An Antenna Analyzer (MFJ-259B or similar), or SWR meter and transceiver

### **SAFETY PRECAUTIONS:**

***WARNING! You can be killed if the antenna, feedline, or the equipment used to install the antenna accidentally contacts any utility lines. Never install an antenna near power lines!***

- 1) Be careful while climbing and carrying the antenna. You can lose your balance if it is handled too casually – which could lead to injury.
- 2) The open ends of the antenna can cause eye injury.
- 3) Mount the antenna high enough so that it is out of reach.
- 4) Make sure that the mast is sturdy enough to support the 2 pound weight and the wind loading of approximately 0.8 square feet.



**Figure 1 – MFJ-1760 Drawing**

### **ASSEMBLY and INSTALLATION PROCEDURE**

Refer to Figure 1 during assembly. Assembly consists of mounting the 2-Meter driven element insulating assembly, attaching the pigtail, mounting the 70cm and 2-meter elements, and then mounting the antenna to the mast.

**WARNING:** Wear safety glasses whenever working with this antenna.

#### **Step-By-Step Procedure**

- 1) Lay out the antenna parts on a flat surface and ensure all parts are available.
- 2) After examining the antenna parts, gather the following additional tools needed for assembly:
  - 5/16" nut driver.
  - 3/8" nut driver
  - Safety glasses.
- 3) Referring to Figure 1, assemble the 2-meter driven element insulating bracket to the hole in the boom. Use a 10-24 x 2" screw, nut, and lock washer.
- 4) Insert the two 10-24 x 1" screws into the closed side of the 2-meter insulating bracket, and secure with two #10 lock washers and nuts.
- 5) Insert the two 2-meter 7/16" x 17-1/2" driven elements over the #10 screws. Then insert the coax pig-tail lugs over these same screws, and secure with two #10 nuts and lock washers.

**Note:** The 3/16" diameter 2-meter and 70 cm elements are held in place with push-nuts. It is easiest to mark the location of the first push-nut on each element with a permanent marker prior to installing it. After the element is pushed through the boom, press a second push-nut on the element to secure it in place. Installing the push-nuts is most easily done by using a short piece of 1/4" ID tubing as a tool to slide the push-nut into place. Alternately, a regular pair of pliers can be used by using the space between the curved jaw openings as clearance over the element. Insert these elements in the following sequence:

6) Insert a push-nut on the 70 cm Reflector and slide it so that it is spaced exactly 6-1/16" from one end. Insert the 70 cm Reflector in the location shown in Figure 1, and slide on a second push-nut to hold it firmly in place.

7) Insert a push-nut on the 70 cm Director #1 and slide it so that it is spaced exactly 5-1/2" from one end. Insert the 70 cm Director #1 in the location shown in Figure 1, and slide on a second push-nut to hold it firmly in place.

**Note:** Director #1 is **shorter** than Director #2

8) Insert a push-nut on the 70 cm Director #2 and slide it so that it is spaced exactly 5-9/16" from one end. Insert the 70 cm Director #2 in the location shown in Figure 1, and slide on a second push-nut to hold it firmly in place.

9) Insert a push-nut on the 70 cm Director #3 and slide it so that it is spaced exactly 5-1/4" from one end. Insert the 70 cm Director #3 in the location shown in Figure 1, and slide on a second push-nut to hold it firmly in place.

10) Insert a push-nut on the 70 cm Director #4 and slide it so that it is spaced exactly 5-1/8" from one end. Insert the 70 cm Director #4 in the location shown in Figure 1, and slide on a second push-nut to hold it firmly in place.

11) Insert a push-nut on the 2-meter Reflector and slide it so that it is spaced exactly 19.5" from one end. Insert the 2-meter reflector in the location shown in Figure 1, and slide on a second push-nut to hold it firmly in place.

12) Insert a push-nut on the 2-meter Director and slide it so that it is spaced exactly 16-7/8" from one end. Insert the 2-meter Director in the location shown in Figure 1, and slide on a second push-nut to hold it firmly in place.

13) Inspect all elements to ensure they are properly located. The Reflectors should be the longest elements, and other elements should be progressively shorter as you move down the length of the boom. The exceptions are 70 cm Director #1 and 70 cm Director #2. 70 cm Director #1 is **shorter** than 70 cm Director #2.

14) Install the mast-mount U-bolt assembly, positioning it in the appropriate holes for either horizontal or vertical antenna mounting.

15) Mount the antenna in the final location. Appropriate mast diameters are 1" to 1-1/2" diameter.

16) Connect the antenna to the transmitter using high quality low loss coaxial cable such as Times Microwave LMR-400 or equivalent.

### **SWR CHECK**

No tuning is required. However, an SWR analyzer such as the MFJ-269 or equivalent is recommended for checking the antenna prior to use. Alternately, a transceiver and SWR meter can be used. The SWR should be less than 1.5:1 across the 2-Meter and 70-cm ham bands.

**GROUNDING CONSIDERATIONS**

Although this antenna is designed to operate efficiently without the requirement of an earth ground, Safety grounding must still be provided to protect equipment, property and persons from the hazards of lighting strikes and other weather related electrical discharges. In addition, the coaxial cable feeding the antenna should have the shield grounded to eliminate the risk of any indoor equipment failure allowing hazardous voltages that could create a shock hazard.

Adequate protection can be accomplished by grounding the shield of the coax to a good earth ground where it enters the building, or directly burying the cable in the earth for several feet before it enters the building. For maximum lightning protection, the coaxial cable should be totally disconnected from the station during threatening weather conditions.

A less effective method of protecting station equipment is to install an in-line coaxial lightning arrestor with a heavy duty ground wire to a suitable earth ground, or a safety switching system as part of the basic ham station equipment.

**MAINTENANCE**

Your antenna is constructed of heavy duty non corrosive materials and should withstand normal climates for many years. The use of some type of coaxial connector moisture protection is recommended at the balun coax connection, and also around the center-feed connections, especially in coastal areas where salty mist is commonplace.

GE makes a pure, silicone grease called "SILICONE DIALECTRIC COMPOUND" that can be applied SPARINGLY to the threaded area of the female connector. This compound, or even a clear silicone heatsink compound, will prevent moisture from entering the connector through the threads and protect the connectors from corrosion. This is the same type of sealer that commercial antenna installers and CATV companies use with great success.

Plast-Dip<sup>TM</sup> and Liquid Electrical Tape<sup>TM</sup>, available at your local hardware store, also do an excellent job of insulating/waterproofing connectors, and can be easily peeled off when desired.

A less desirable, but still adequate sealer is the automobile seam sealer commonly sold as "coax seal". This is a semi-pliable black or white sealing compound.

When installing any "coax seal", NEVER completely cover the barrel of the coax connector. The sealer should ONLY be placed near the junction of the threaded part of the chassis connector and the knurled area of the male connector. This will leave the bottom of the male outer sleeve open and permit the connector to "breathe" so it does NOT collect moisture!

**TECHNICAL ASSISTANCE**

If you have any problem with this unit first check the appropriate section of this manual. If the manual does not reference your problem or your problem is not solved by following the manual you may call MFJ toll-free at 1-800-647-8324 or FAX to 662-323-6551. Outside of the continental U.S.A. call 662-323-5869. You will be best served if you have all information on your antenna and station handy so you can answer any questions the technicians may ask.

You can also send questions to MFJ, 300 Industrial Park Road, Starkville, MS 39759. Send a complete description of your problem, an explanation of exactly how you are using your antenna and a complete description of your station.

## FULL 12 MONTH WARRANTY

MFJ Enterprises, Inc. warrants to the original owner of this product, if manufactured by MFJ Enterprises, Inc. and purchased from an authorized dealer or directly from MFJ Enterprises, Inc. to be free from defects in material and workmanship for a period of 12 months from date of purchase provided the following terms of this warranty are satisfied.

1. The purchaser must retain the dated proof-of-purchase (bill of sale, canceled check, credit card or money order receipt, etc.) describing the product to establish the validity of the warranty claim and submit the original or machine reproduction of such proof of purchase to MFJ Enterprises, Inc. at the time of warranty service. MFJ Enterprises, Inc. shall have the discretion to deny warranty without dated proof-of-purchase. Any evidence of alteration, erasure, or forgery shall be cause to void any and all warranty terms immediately.
2. MFJ Enterprises, Inc. agrees to repair or replace at MFJ's option without charge to the original owner any defective product provided the product is returned postage prepaid to MFJ Enterprises, Inc. with a personal check, cashiers check, or money order for **\$10.00** covering postage and handling.
3. MFJ Enterprises, Inc. will supply replacement parts free of charge for any MFJ product under warranty upon request. A dated proof of purchase and a **\$8.00** personal check, cashiers check, or money order must be provided to cover postage and handling.
4. This warranty is **NOT** void for owners who attempt to repair defective units. Technical consultation is available by calling (601) 323-5869.
5. This warranty does not apply to kits sold by or manufactured by MFJ Enterprises, Inc.
6. Wired and tested PC board products are covered by this warranty provided **only the wired and tested PC board product is returned**. Wired and tested PC boards installed in the owner's cabinet or connected to switches, jacks, or cables, etc. sent to MFJ Enterprises, Inc. will be returned at the owner's expense unrepairs.
7. Under no circumstances is MFJ Enterprises, Inc. liable for consequential damages to person or property by the use of any MFJ products.
8. **Out-of-Warranty Service:** MFJ Enterprises, Inc. will repair any out-of-warranty product provided the unit is shipped prepaid. All repaired units will be shipped COD to the owner. Repair charges will be added to the COD fee unless other arrangements are made.
9. This warranty is given in lieu of any other warranty expressed or implied.
10. MFJ Enterprises, Inc. reserves the right to make changes or improvements in design or manufacture without incurring any obligation to install such changes upon any of the products previously manufactured.
11. All MFJ products to be serviced in-warranty or out-of-warranty should be addressed to **MFJ Enterprises, Inc., 921A Louisville Road, Starkville, Mississippi 39759, USA** and must be accompanied by a letter describing the problem in detail along with a copy of your dated proof-of-purchase.
12. This warranty gives you specific rights, and you may also have other rights which vary from state to state.